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Application/Control Number: 10/670,068	Art Unit: 2167
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Comments:

Attached are proposed amendments to improve clarity of the claims and to put the case into condition for allowance. Please let me know by Friday 10am eastern time if authorization for an examiner's amendment can be done, such that the case may be completed.

Number of pages 7 including this page

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Proposed Amendments

4. (currently amended) A computer-implemented document-searching method for searching a document having a hierarchical structure with elements separated by element identifiers, comprising the steps of:

generating an XPATH (XML path language) query automaton,

wherein the query automaton, is configured as a table structure that contains a plurality of states of a backward nodes, a condition for transition, and a search state;

wherein a collection of entries of the query automaton express a state transition;

wherein generating the XPATH query automaton comprises the steps of:

generating and registering the state transition, wherein generating and registering a state transition comprises:

replacing an XPATH axis including an XPATH axis in a forward direction that is exemplified as an axis child, or a descendant in an XPath into the state transition,

replacing an XPATH axis including an XPATH axis in the an opposite direction that is exemplified as axis parent, ancestor in an XPath into the state transition,

replacing an XPATH axis including an XPATH axis in a direction of a following-sibling, or a preceding-sibling in said XPath into the state transition,

replacement of a predicate of an XPath into the state transition,

replacement of a logical product (and) of a predicate of an XPath into the state transition,

replacement of a logical add (or) of a predicate of an XPath into the state transition,

replacement of a logical NOT (not) of a predicate of an XPath into the state transition, and

wherein the replacing and replacement keep an input query expression equal in terms of search, and generates the query automaton including the plurality of states of the backward nodes, the condition for transition, and said search state, wherein said search state includes two states of said input query expression concurrently in a state transition, and wherein every axis regarding sibling relationship among nodes is included in the search condition for said query automaton;

a query automaton evaluator determining the state transition of a node under determination by storing a left node and a lower node in correspondence with an identified element identifier, wherein the information obtained from said

left node and information obtained from said lower node for a state transition is used concurrently, and evaluating said query automaton with a search result of said left node and said lower node;

storing the XPATH query automaton generated by said compiling device in a query automaton storage device;

reading out said XPATH query automaton from said query automaton storage device and storing said query automaton, while reading in said document and performing a stream search with said query automaton evaluator by using states of a plurality of different types of nodes in said element identifiers included in said document and said query automaton, thereby using two inputs and a search state; and

storing the output of the query automaton evaluator in a storage device and thereafter outputting the stored output of the query automaton evaluator and the output of a searched node.

5. (canceled)

6. (previously presented) The document-searching method according to Claim 4, wherein said step of generating an XPATH query automaton comprises a step of generating an XPATH query automaton with a state transition corresponding to an initial state, a final state, and a search state registered thereon.

7-13 (canceled)

14. (currently amended) A computer-implemented compiling method generating a XPATH(XML path language) query automaton for performing a document search, comprising the steps of:

wherein the query automaton, is configured as a table structure that contains a plurality of states of a backward nodes, a condition for transition, and a search state;

wherein a collection of entries of the query automaton express a state transition;

wherein generating the XPATH query automaton comprises the steps of:

generating and registering a state transition, wherein generating and registering a state transition comprises:

replacing an XPATH axis including an XPATH axis in a forward direction that is exemplified as an axis child, or descendant in an XPath into a state transition,

replacing an XPATH axis including an XPATH axis in the an opposite direction that is exemplified as an axis parent, or ancestor in an XPath into a state transition,

replacing an XPATH axis including an XPATH axis in a direction of a following-sibling or a preceding-sibling sibling in an XPath into a state transition, replacement of a predicate of an XPath into a state transition,

replacement of a logical product (and) of a predicate of an XPath into a state transition,

replacement of a logical add (or) of a predicate of an XPath into a state transition, replacement of a logical NOT (not) of a predicate of an XPath into a state transition, and

wherein the replacing and replacement keeping an input XPATH query expression equal in terms of search, and storing a plurality of states of a backward node in correspondence with said backward node into a query automaton storage device;

generating a query automaton by registering a plurality of states of said backward node, a condition for transition, at least a search state, wherein said search state includes two states of said input query expression concurrently in a state transition, wherein every axis regarding sibling relationship among nodes is included in the search condition for said query automaton, and a reached state in correspondence with each other in said storage device, performing parsing, and identifying different types of nodes in said element identifiers;

wherein generating and registering a state transition further includes the query automaton including the plurality of states of the backward nodes, the condition for transition, and at least a search state, a query automaton evaluator determining a state transition of a node under determination by storing a left node and a lower node in correspondence with an identified element identifier, wherein the information obtained from said left node and information obtained from said lower node for a state transition is used concurrently, and

evaluating said query automaton with a search result of said left node and said lower node and wherein node data stored until then is cleared after said evaluating; and

storing the output of the query automaton evaluator in a result-storage device and thereafter outputting the stored output of the query automaton evaluator and the output of the searched node.

15. (Original) The compiling method according to Claim 14, wherein said compiling method comprises a step of identifying said backward node as a left node or a lower node according to a type of said element identifier, and wherein said plurality of states are states of said left node and said lower node.

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